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itive constitution of motor nerves, neither fibres nor sheaths form a part. Neither are axis cylinders or medullary substance developed. End-organs or terminal branching ramifications of the nerve fibres do not as yet exist, but the capacity for their development is probably inherent in the simple structures and relations above described. The relations described by Dohrn are strongly opposed to the theory of the *ab initio* continuity of nerve and muscle by impalpably fine fibres, and if fully established fatal to Hensen's doctrine. It is needless to add that, while these new results are not wholly in accord with those of Balfour, they will probably serve to complete the true doctrine of the development of the spinal and cranial nerves, the foundations of which were first laid down by that remarkable investigator.

THE MATURATION AND FERTILIZATION OF THE EGG OF PETROMYZON PLANERI.¹ A. A. Böhm in this extended memoir gives a very complete resumé of the work of his predecessors upon the early history of the eggs of the lamprey. The formation of the polar globules is described, and the peculiar manner of union of the segments of the female and male pronuclei are illustrated. It seems that the chromatin substance of the head of the spermatozoon in this process always first breaks up into about four rounded segments or *spermatomerites* as Böhm calls them, which remain for some time lying close together in a straight or curved row.

PHYSIOLOGY.²

INHIBITION IN MAMMALIAN HEART.—Professor McWilliam continues³ his work on cardiac physiology by a study of the phenomena of inhibition in the mammalian heart.⁴ The results are given in considerable detail, and can be discussed here very briefly only. The effects of the stimulation of the vagus nerve on the auricles and on the ventricles are in general similar, consisting

¹*Ueber Reifung und Befruchtung des Eies von Petromyzon planeri*, Arch. f. mik. Anat., xxxii. 4 Hft. 1888. pp. 613—670. Taf. xxiv—xxv.

²This department is edited by Dr. Frederic S. Lee, Bryn Mawr College, Bryn Mawr, Pa.

³See AMERICAN NATURALIST, Jan. 1889.

⁴*Journal of Physiology*, vol. 9., p. 345.

of a slowing of the rhythm, and a depression of both the contraction force and the conduction power of the muscle; but the functional relation of the vagus to the ventricle is not nearly so close and intimate as to the auricle. The condition and working of the auricular muscle are much more readily and more profoundly altered than are those of the ventricular muscle. Augmentation following the depression, as has been pointed out for the cold-blooded animals, is slight and inconstant, which would seem to be in opposition to Gaskell's idea of the vagus being an anabolic nerve. Section of the vagus causes in addition to the acknowledged acceleration of beat a marked augmentation in the contraction force of both auricles and ventricles. As has been pointed out in cold-blooded animals, the author finds a local inhibitory area to exist in the mammalian heart, *i. e.*, a limited area, stimulation of which affects the ventricle in exactly the same way as stimulation of the vagus does. In the cat and dog this region overlies the auricular septum on the dorsal aspect of the auricles. The vagus fibres pass through or near it, but it evidently contains structures differing from the vagus in regard to excitability, relations to curari and certain other influences. While normally stimulation of the venous terminations or of the auricles causes an acceleration of beat, under certain abnormal conditions, *e. g.*, in a dying heart, such stimulation results in inhibition, thus indicating under such conditions a reversion to a physiological type normally obtaining in hearts of certain lower vertebrates.

MEETING OF AMERICAN PHYSIOLOGICAL SOCIETY.—The American Physiological Society held its annual meeting in Philadelphia, December 29 and 31, 1888. The laboratories of the Jefferson Medical College and the University of Pennsylvania were inspected, and laboratory methods were informally discussed. The following papers were presented:

1. E. T. Reichert.—“The Excitability of the Different Columns of the Spinal Cord.”
2. E. T. Reichert.—“The Rate of Transmission of Nerve Impulses.”
3. E. T. Reichert.—“A New Calorimeter.”
4. J. W. Warren.—“On Sensory Reinforcements of the Knee-Jerk.”
5. H. H. Donaldson.—“On the Changes in Ganglion Cells Due to Stimulation.”
6. H. N. Martin.—“The Lethal Temperatures of the Cat's Heart.”

7. H. N. Martin.—“The Influence of Light on the CO₂ Excretion of Frogs Deprived of their Cerebral Hemispheres.”

The Council for 1888-9 consists of S. W. Mitchell, President; H. N. Martin, Secretary and Treasurer; H. P. Bowditch, J. G. Curtis, H. C. Wood.

Dr. S. Weir Mitchell placed at the disposal of the Society the sum of two hundred dollars to be offered as a prize for researches on the rate of transmission of nerve impulses in man, such researches to be completed at the end of two years.

PHYSIOLOGICAL PRIZE.—In accordance with the offer of Dr. S. Weir Mitchell to the American Physiological Society, the latter Society now formally offers to residents of North America the prize of two hundred dollars for researches bearing on “the rate of transmission of nerve impulses—afferent and efferent—and the duration of reflex and reaction time in the higher animals, especially man; also the conditions—normal and pathological—which alter such rates and times.” The work must be done between Jan. 1, 1889 and Oct. 1, 1890. Further information may be obtained of Prof. H. Newell Martin, Baltimore, Maryland: Johns Hopkins University.

PROPOSED INTERNATIONAL CONGRESS OF PHYSIOLOGISTS IN 1889.—In accordance with the circular issued by the English Physiological Society, a meeting was held in Berne, Switzerland, in September, 1888, to consider the advisability of holding, during the present year, an international congress of physiologists. England, France, Germany, Italy and Switzerland were represented. It was decided to hold such a congress at Basle, beginning September 10, 1889. The subjects to be brought before the meetings include Anatomy, Histology, Physics, Chemistry, Experimental Pathology, and Pharmacology, in so far as they bear directly upon Physiology. All communications are to be as little formal and as fully demonstrative and experimental as possible. Professor Miescher and the Department of Education of the City of Basle have cordially approved the project. The committee of the English Physiological Society has been continued with executive powers to organize the Congress, and through a circular requests information concerning probable attendance, titles of intended communications, and details of apparatus required for demonstrations. American physiologists intending to be present may notify Dr. H. P. Bowditch (till July 1st), Harvard Medical School, Boston, Mass; (subsequently) care of Knautt, Nachod & Kühne, Leipzig, Germany.

MICRO-ORGANISMS AND DIGESTION.—The extensive researches which are now being carried on in regard to the relations of bacteria to disease increase our interest in any addition to our knowledge of their connection with the normal activities of the body. Drs. Harris and Tooth, of St. Bartholemew's Hospital, have undertaken a series of experiments to investigate the relations of micro-organisms to digestion, and have published a preliminary communication on the subject.¹ They find it easy to prove that proteids can be digested by pepsin independently of micro-organisms, but have not succeeded in establishing the converse proposition, namely, that micro-organisms can of themselves convert proteids into peptone. In experimenting with trypsin it was found necessary to employ antiseptics in order to make sterile experiments. With mercuric chloride, 1 to 2 per cent. neither peptone nor bacteria appeared, with carbolic acid, 1 to 2 per cent. peptone was abundant but bacteria absent; while iodine interfered neither with the digestion nor the development of bacteria. It was thus proved that the pancreatic ferment, like the gastric, can digest proteids without the aid of micro-organisms.

It was found that the formation of leucin and tyrosin is probably due at least in part to the action of bacteria, and that the formation of indol seems to be entirely dependent upon it. The results of experiments indicate that there are special indol-forming organisms, in the absence of which this substance does not appear.

These conclusions are in substantial accord with views which have been previously entertained, though hitherto they have been accepted without adequate experimental proof.—*M. A. Johnson.*

PSYCHOLOGY.

OBSERVATIONS ON PUTORIUS VISON.—On July 6, 1887, while engaged in geological work on the Cedar River, near Osage, Iowa, my attention was attracted by the peculiar actions of a Mink (*Putorius vison*.) By careful maneuvering, we were enabled to approach to within a short distance of where it was engaged, and there watch its behaviour unobserved. It was an old mother Mink engaged in fishing, for her young.

¹Journal of Physiology, vol. 9, No. 4.